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Imported Fire Ant Facts

TEXAS AGRICULTURAL EXTENSION SERVICE
THE TEXAS A&M UNIVERSITY SYSTEM
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IMPORTED FIRE ANT FACTS

EXTENSION ENTOMOLOGISTS
THE TEXAS A&M UNIVERSITY SYSTEM

THE IMPORTED FIRE ANT[1] is a serious pest of animals, crops and rangeland in Southeast Texas. This insect, unlike many other insect pests, affects both urban and rural residents. Imported fire ant invasion of lawns, pasturelands, hay meadows, parks, school yards and recreational areas causes unsightly damage, is annoying and poses a possible health hazard. This vicious, aggressive pest closely resembles two native, but less serious, species of fire ants[2] commonly found in Texas.

Spread

The imported fire ant first entered the United States from South America 50 years ago, through the port at Mobile, Alabama. Since then it has become an infamous pest of both rural and urban areas in the South. It has spread over Alabama, Mississippi and Louisiana into Arkansas, Florida, Georgia, South Carolina, North Carolina, Tennessee and Texas.

Imported fire ant infestations were found in 68 counties in early 1975. Infestations generally were confined to the area east of a line running from Nueces County in South Texas northeast to Bowie County in East Texas. Outlying infestations have been noted in the Dallas-Fort Worth, Waco and San Antonio metropolitan areas.

Two native ant species closely resemble the imported fire ant, but their mounds are small compared to those built by the imported species.

Distinguishing between imported and native species is difficult, but positive identification can be made by specialists familiar with all three species. In most cases, identification is made by examining the larger workers. Each colony consists of a small number of the larger forms (major workers). Samples sent in for identification

[1] *Solenopsis invicta* Buren.

[2] *Solenopsis xyloni* McCook (southern fire ant); *Solenopsis geminata* Forel (tropical fire ant).

Top, pupa; bottom, larva.

Top, winged female (queen); middle, major worker; bottom, minor worker.

should contain three or more of the major workers. *Contact your county Extension agent for information on submitting specimens for identification.*

The imported fire ant spreads naturally through nuptial flights; however, the queens also may spread by crawling, drifting downstream in logs or traveling aboard cars, trucks or trains. Shipments of nursery stock or soil from an infested area may relocate an entire ant colony or nest.

The nuptial or queen flights commonly occur in April, May and June, and usually follow a rain. Nuptial flights also have been observed as late as fall or early winter in the warmer areas along the Gulf Coast.

Damage

Imported fire ants can damage young plants by gnawing holes in roots, tubers, stalks and buds. They may attack young, unprotected animals, such as newborn calves and pigs and newly hatched quail and poultry.

Agricultural losses resulting from this pest are difficult to assess, since they consist of reduced efficiency of labor and machinery. Fire ant mounds damage machinery, hinder mowing operations and reduce the value of the land in heavily infested areas. Since these ants prefer land exposed to the sun, some of the most valuable farming and pastureland is heavily infested.

Fire ant stings on a child's hands.

Imported fire ants interfere with harvesting of crops because their sting is quite painful. Farmers lose valuable time during seeding, fertilizing and harvesting operations.

The imported fire ant also is quite annoying to urban residents. The ants invade such areas as lawns, parks, playgrounds, school yards, cemeteries, golf courses and even homes. The ants, which can sting repeatedly, will attack anything that disturbs their mound. Symptoms of the fire ant sting include burning and itching, possibly followed by the formation of a white sore or pustule that can leave a permanent scar. The venom of the imported fire ant is unlike that of other stinging insects. Some persons who are hypersensitive to this venom may suffer chest pains or nausea and even lapse into a coma from one sting. Persons who exhibit severe reactions to fire ant stings should receive immediate treatment.

Development

The ant colony consists of three adult forms:

1. Winged females (queens) which lay the eggs.

2. Winged fertile males which mate with the queens.

3. Worker ants which are wingless and usually sterile. Adult workers of the imported fire ant differ in size. The larger forms are referred to as "major workers," the smaller as "minor workers." Activities of the two appear the same.

Unsightly damage to homesites.

The fertile winged forms live in seclusion until it is time for them to leave the colony (mound) and begin their one mating flight. The fertile males are smaller and blacker than the queens. They fly directly from the mound surface while the queens usually climb on nearby plants and slowly lift their bodies into the air.

Once airborne, the ants fly out of sight and mate in flight. The males die soon afterward, while the fertilized queens find suitable nesting sites, shed their wings and begin digging underground chambers in which to lay eggs.

The queen first lays a cluster of 10 to 15 eggs and looks after this cluster almost constantly. When the eggs hatch (in 8 to 12 days), the helpless larvae derive food from the queen's body. Later the queen lays clusters of 75 to 125 eggs, and the larvae receive food gathered by the workers. The larvae pupate in 6 to 12 days and adults emerge in 9 to 16 days. A longer time is required for development of the winged forms. Mound building by newly established colonies is not conspicuous for 12 to 18 months after the young queen initiates egg laying.

The average-sized colony may contain 100,000 to 500,000 workers and only a few dozen winged forms.

The workers are red or black and are 1/8 to 1/4 inch long. They forage for food, maintain and enlarge the mound, care for the brood and protect the colony.

Imported fire ants build mounds in almost any type of soil, but are more prevalent in open areas such as cultivated fields, pastures, parks, lawns and meadows. They prefer areas exposed to full sunlight. They often are found in rotting logs, around stumps and occasionally under buildings.

The mounds constructed by the imported fire ant average 15 or more inches in diameter and 10 to 12 inches in height. Around stumps, shrubs or posts the mounds may attain a height of 3 feet.

SUPPRESSING THE PROBLEM

The following goals have been established for fire ant control:

1. Survey to determine the extent of imported fire ant infestation.

2. Set up quarantine regulations to prevent the ants from invading additional states and regions.

3. Treat outlying infestations first to shrink the infested area.

4. Suppress ant populations within a generally infested area so that uninfested land is protected.

Three coordinated steps to control the imported fire ant now being taken are surveys, quarantines and treatment.

Surveys

Surveys are conducted by Federal and State pest control workers to determine the outer limits of the generally infested areas and the extent and degree of infestation. Such information is vital to program officials, advisory committees and other federal or state agencies in planning effective program procedures to combat the pest.

Surveys are continuous because of the ever-changing pattern of infestation. Efforts to spot new infestations are intensified in the fall and winter months when mounds are less obscured by vegetation.

Quarantines

A Federal quarantine was invoked in 1958 to help prevent the interstate spread of the imported fire ant and to protect treated areas from

reinfestation. The federal quarantine and parallel state quarantine regulate the movement of materials such as soil, gravel and sand, or products with soil attached, as well as unmanufactured forest products.

By inspecting these products, and treating them if necessary, state and federal program personnel have kept them moving within trade channels in compliance with federal and state quarantine regulations. Thus, long-distance spread of the pest through commerce has been prevented.

States immediately affected by quarantines are: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Texas.

Treatment

Mirex bait currently offers the safest means of controlling the imported fire ant. Formulated as ant-attractive granules consisting of ground corncob grits impregnated with the Mirex insecticide dissolved in soybean oil, the bait provides effective control at very low dosages per acre. When distributed at rates indicated on the product label, less than 1/7 ounce of actual insecticide is applied per acre. Another desirable feature of the bait is its delayed toxic action against the ants. This delay allows the foraging ants to carry the bait into the colony and distribute it to the queen and brood before it takes effect. Because of the bait's slow action, several weeks usually elapse before the colony is exterminated.

The United States Environmental Protection Agency is responsible for registration and labeling of insecticides and other pesticidal chemicals. Essential regulations pertaining to the use of Mirex bait are as follows:

1. Aerial broadcast application of Mirex pesticides is prohibited within coastal counties; and all broadcast application, aerial or otherwise, of Mirex pesticides is prohibited in or near aquatic areas and heavily forested areas.

Aquatic areas are defined as: Any aquatic system including estuaries, rivers, streams, swamps, marshes, lakes, bays, ponds, or other bodies of water which are shown on U.S. Geological Topographic Survey maps at a scale of

1:24,000, excluding intermittent streams as defined herein, but not excluding intermittent streams with a flow during the period of application, and farm ponds as defined herein, but not excluding ponds used for food production or human consumption.

Farm ponds are defined as: Man-made impoundments of water occurring on farms to be utilized for purposes such as irrigation, stock-watering and recreation.

Intermittent streams are defined as: Those streams that have continuous flow during periods of heavy rainfall, but with little or no flow during the remainder of the year.

Heavily forested areas are defined as: Forest stands having 80 percent or more crown closure with trees of any size.

2. Ground broadcast application by private persons is prohibited in the coastal counties and all other areas unless such application is accomplished with ground application equipment which can be calibrated to deliver the recommended label dosages.

3. Individual mounds may be treated by hand at dosages not to exceed recommended label rates.

County Extension agents are regularly informed of current labeling and restrictions, and can furnish current information regarding the proper use of Mirex.

Heptachlor and *chlordane* can be used to control the imported fire ant. These insecticides may be used in nurseries, industrial sites, lawns, golf courses, cemeteries, parks and other restricted, non-agricultural, non-aquatic areas. These materials are persistent chlorinated hydrocarbon insecticides, so they must be used where they will not be a hazard to wildlife or result in contamination of raw agricultural commodities or livestock.

Chlordane and heptachlor may be used as broadcast soil treatments in restricted areas where imported or other species of fire ants forage. Where these materials can be used, the granular form is most frequently applied. However, other dry formulations or liquids also may

be used. The broadcast rate for chlordane is 1.0 to 1.5 pounds per acre, while heptachlor may be used at the rate of 1.25 pounds per acre.

In small, lightly infested areas, the ants may be controlled by treating individual mounds with heptachlor or chlordane. Individual mound treatment usually kills the ants in the particular mound, but does not prevent infestations in untreated areas. Treated areas should be examined within 3 weeks after treatment, and surviving colonies treated again. When possible, insecticides should be applied during the winter or the cool months of spring.

The mound treatment is simple. First, tear down the mound and apply 1 to 2 cups of granules or dust containing 10 percent chlordane or 10 percent heptachlor, either by hand or dust gun, to the mound and to the ground within a 10- to 12-foot area on all sides. The following mixtures also may be used to treat mounds:

Emulsifiable concentrate	Tbsp. to 3 gal. of water
Chlordane (4 lb. per gal.)	4
Heptachlor (2 lb. per gal.)	8

(Thoroughly saturate the mounds.)

Heptachlor and chlordane are not currently registered for large block or area treatment of the imported fire ant. Check with your county Extension agent concerning the safety and advisability of treating specific areas.

Caution

Heptachlor and chlordane should not be applied where food, feed or forage will be grown. Dairy animals and animals being finished for slaughter must not be permitted to graze in treated areas. The insecticides must be kept out of water used by humans or animals. The insecticides should not be applied to food crops.

POLICY FOR MAKING INSECT CONTROL SUGGESTIONS

Insect control suggestions made by the Texas Agricultural Extension Service and the Texas Agricultural Experiment Station of the Texas A&M University System are based upon:

- Effectiveness of materials under Texas conditions.

- Avoiding residues in excess of allowable tolerances on the crop at harvest.
- Avoiding toxicity to humans, animals and desirable plants.
- Avoiding adverse side-effects on beneficial predators, parasites, honeybees, fish and other wildlife, plants, animals and humans.

Suggested chemicals also must be registered and labeled for use by the U.S. Environmental Protection Agency and the Texas Department of Agriculture. The status of insecticide label clearances is subject to change and changes may have occurred since this publication was printed. County Extension agents and Extension entomologists are notified as these changes occur.

The insecticide USER is always responsible for the effects of pesticide residues on his own crops and livestock as well as problems caused by drift from his property to other properties or crops. Always read and follow carefully all instructions on the label.

For further information, contact your county Extension agent, Extension entomologist (AC713 845-1661), or the project leader in pesticide chemicals (AC713 845-1353), Texas A&M University, College Station, Texas 77843.

COVER PHOTO

Imported fire ants prefer land exposed to the sun. Thus some of the most valuable farming and pastureland is heavily infested. These mounds were located on an East Texas pasture.

Photographs courtesy of

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